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PARASITIC MITES OF SURINAM. XXXVIII.

RADFORDIA (*RADFORDIA*) *HOLOCHILUS* SPEC. NOV. (ACARINA: PROSTIGMATA: MYOBIIDAE) FROM *HOLOCHILUS BRASILIENSIS* (RODENTIA: CRICETIDAE)

by

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With 15 text-figures

ABSTRACT

Radfordia (*Radfordia*) *holochilus* spec. nov. from *Holochilus brasiliensis* (Desmarest, 1819) is described, figured and compared to related species.

INTRODUCTION

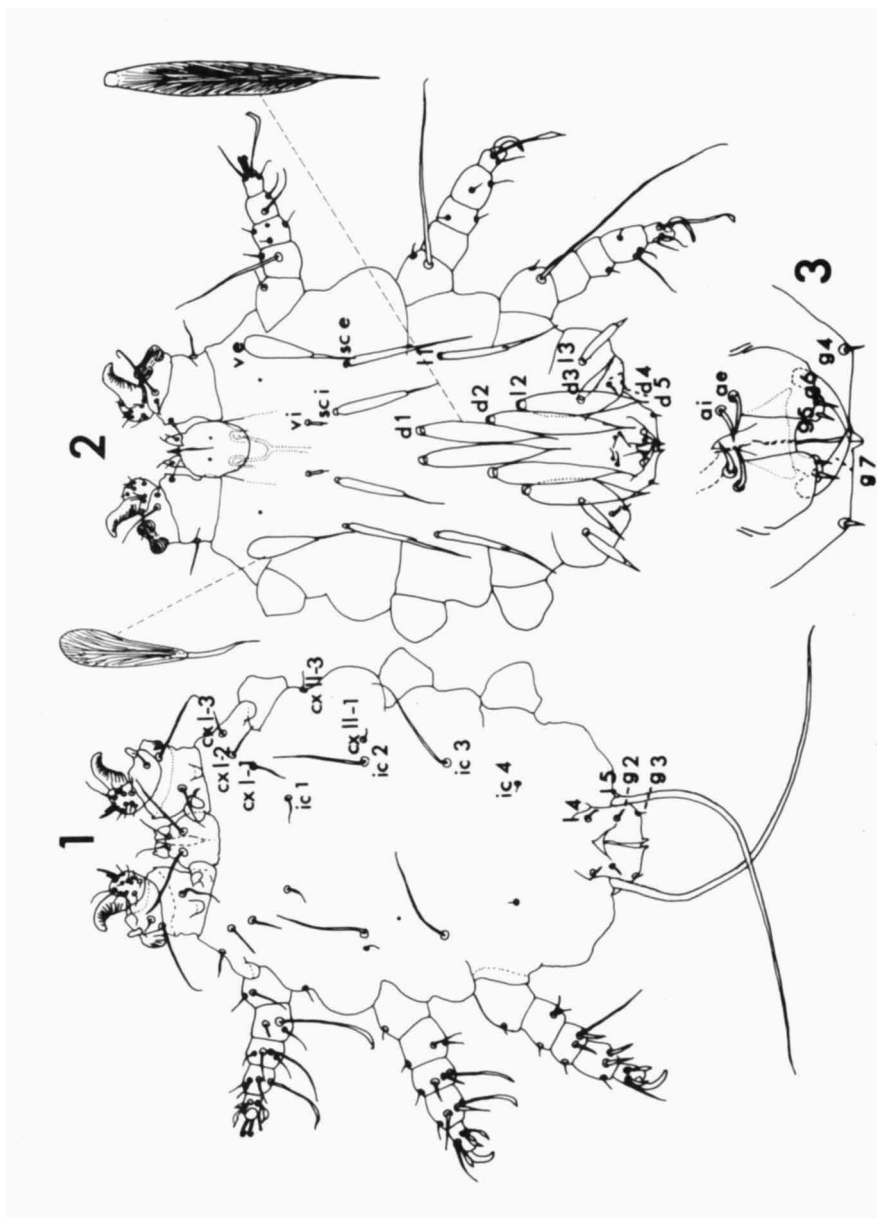
During investigations in Surinam in 1971 F. S. Lukoschus and N. J. J. Kok collected a new species of myobiid mites from *Holochilus brasiliensis*, genus *Radfordia* Ewing, 1938, subgenus *Radfordia* sensu Fain, 1974, and Fain & Lukoschus, 1977. The new species is similar to *R. (R.) oryzomys* Fain & Lukoschus, 1976, in having *ic* 2 and *ic* 3 long, dorsals 1 and 2 and lateral 2 (which are only 4-7 μ m in *R. (R.) oryzomys*). The new species is here described and figured with all developmental stages and compared to other species of the genus. We follow the setal nomenclature of Fain, 1973.

Financial aid for our study was provided by grant W 83-14 of the Dutch Foundation for the Advancement of Tropical Research (WOTRO).

DESCRIPTION

***Radfordia* (*Radfordia*) *holochilus* spec. nov.** (figs. 1-15)

Showing the characteristics of the genus *Radfordia* Ewing, 1938, and of the subgenus *Radfordia*, sensu Fain, 1974.



Figs. 1-3. *Radfordia* (*Radfordia*) *holochilus* spec. nov., female. Holotype venter (1), holotype dorsum (2), detail of genital region (3).

Length of holotype (female) including gnathosoma 420 μm , width between legs II and III 296 μm . Measurements of ten paratypes in table I. Dorsum (fig. 2). — All dorsal idiosomal setae barbed, except *d 1*, *d 2*, *l 5*. Broad setae striated with central cone. Small *v i* (18 μm) far behind broad *v e* (95 μm), but situated close to *sc i*. *Sc i* (91 μm) and *sc e* (110 μm) on same level. *l 1*, *l 3*, *d 3* (104 μm , 58 μm , 51 μm) distinctly smaller than lanceolate-foliate setae *d 1*, *d 2*, *l 2* with pointed end (119 μm , 116 μm , 109 μm), relatively broad for subgenus (15 μm , 17 μm , 19 μm); setae *d 4*, *d 5* and *l 4* minute (10 μm , 6 μm , 9 μm), the latter located ventrally between *l 5*, which extend to 3/4 of body length. Genital region (fig. 3) with smooth genital cone, pronounced vulvar valves with strong genital hooks *g 7* (26 μm) and setiform genital setae. Unmodified anal setae *a i* and *a e* in front of uroporus (copulatory opening). Venter (fig. 1) with *ic 1-4* and three coxals in field I and two in field II. *ic 2* and *ic 3* remarkably long (78 μm , 80 μm). Gnathosoma as usual in subgenus without gnathosomal hooks, ventrally longitudinally striated, gnathosomal setae small, setiform. Legs as in other species of the subgenus with claw formula 0-2-1-1, long and strong setae dorsally on trochanters III and IV, and a long seta on femur I. Legs I as in other species of the subgenus, with small medio-ventral trochanter spur. Chaetotaxy of legs II-IV: tarsi 7-6-6, tibiae 6-6-6, genua 7-6-5, femora 5-3-3, trochanters 3-3-3. One short solenidion on tarsus II and one on genu II. Measurements of paratypes in table I.

Male, allotype (figs. 4-6), length 351 μm , width 220 μm . Dorsal setae *v e*, *sc e*, and *l 1* (84 μm , 103 μm , 130 μm) are long, narrow and barbed; *v i*, *sc i*, *l 3* (11 μm , 8 μm , 6 μm) are minute, setiform, and *d 2*, and *l 2* are lanceolate, foliate and striated, but lack the pointed end possessed by the female. These latter setae are 68 μm and 88 μm long, 11 μm and 9 μm broad. Genital opening in a long conical, anteriorly directed protrusion (fig. 6) with six pairs of setae, situated just behind *v i*. It would seem that some of these are dorsal setae, translocated forwards to the genital region. Penis long (197 μm), stout and directed forwards. Terminal setae *l 5* (340 μm) about equalling body length. Gnathosoma, legs and venter (fig. 4) as in female, except dorso-median seta on tarsi I and II stout and blunt.

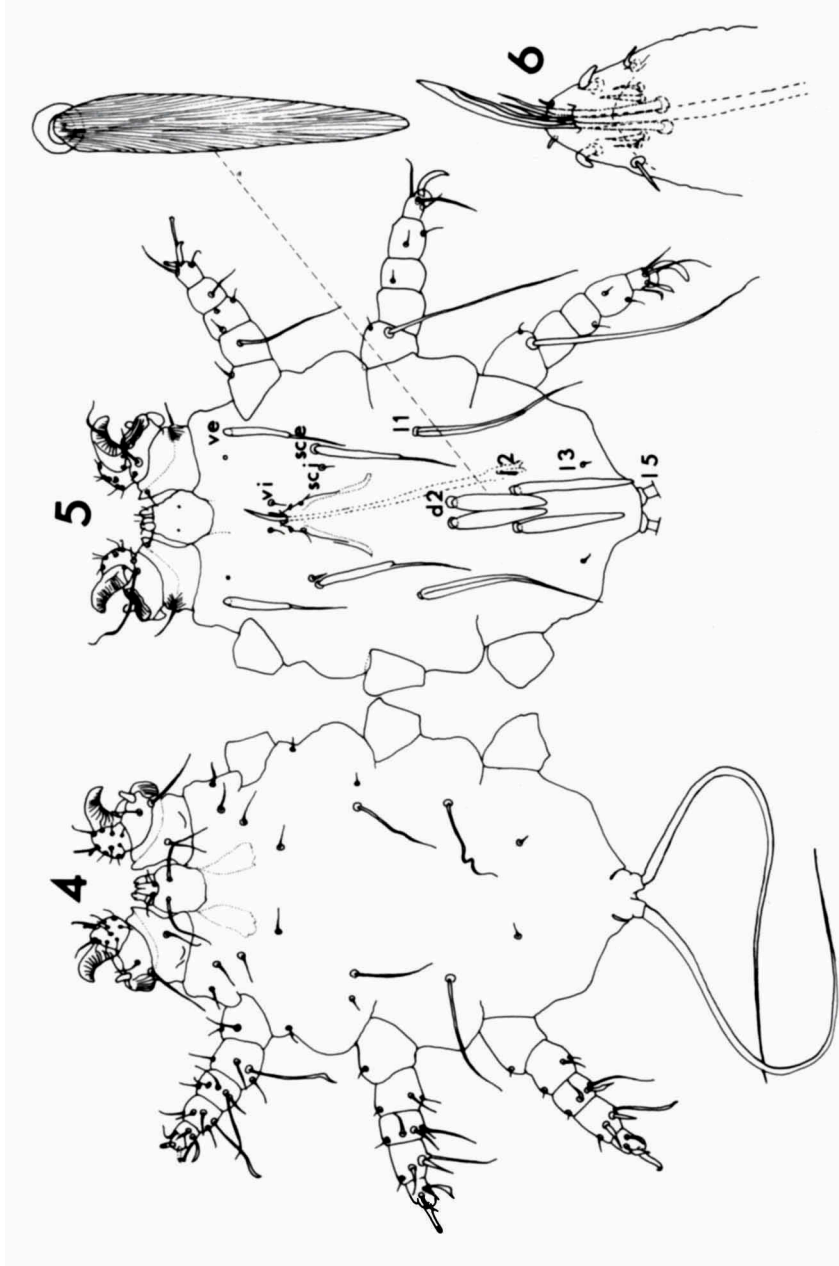
Tritonymph (figs. 7-9). — Length of figured specimen including legs I, 350 μm , width 276 μm . Measurements of paratypes in table II. All dorsal setae of female except genital setae are present. All setae short, except *sc i* (88 μm), *d 1* (60 μm), *d 2* (55 μm) and *l 2* (44 μm), the latter three 11, 10 and 9 μm wide. All setae barbed or two-lobed, except *l 4* and *d 5*, which are setiform, and *l 5* (238 μm). Two pairs of anal setae close to uroporus (fig. 9). Venter with four pairs of short intercoxals, two pairs of keel-shaped coxals I, and one pair of setiform coxals II. Gnathosoma and legs I as in other species of subgenus. Legs II-IV consisting of four segments (fusion of genu and femur indicated by position of solenidion sigma on leg II), with claw formula 1-1-0. Chaetotaxy of legs II-IV: tarsi 7-6-4, tibiae 5-3-3, femoro-genua 4-1-1, trochanters 1-1-0. Solenidia as in adults.

TABLE I: Measurements of body and setae of females and males of *Radfordia (Radfordia) holochilus* spec. nov. and females of *Radfordia (Radfordia) ensifera* Poppe (1896). Measurements in μm , of 10 paratypes.

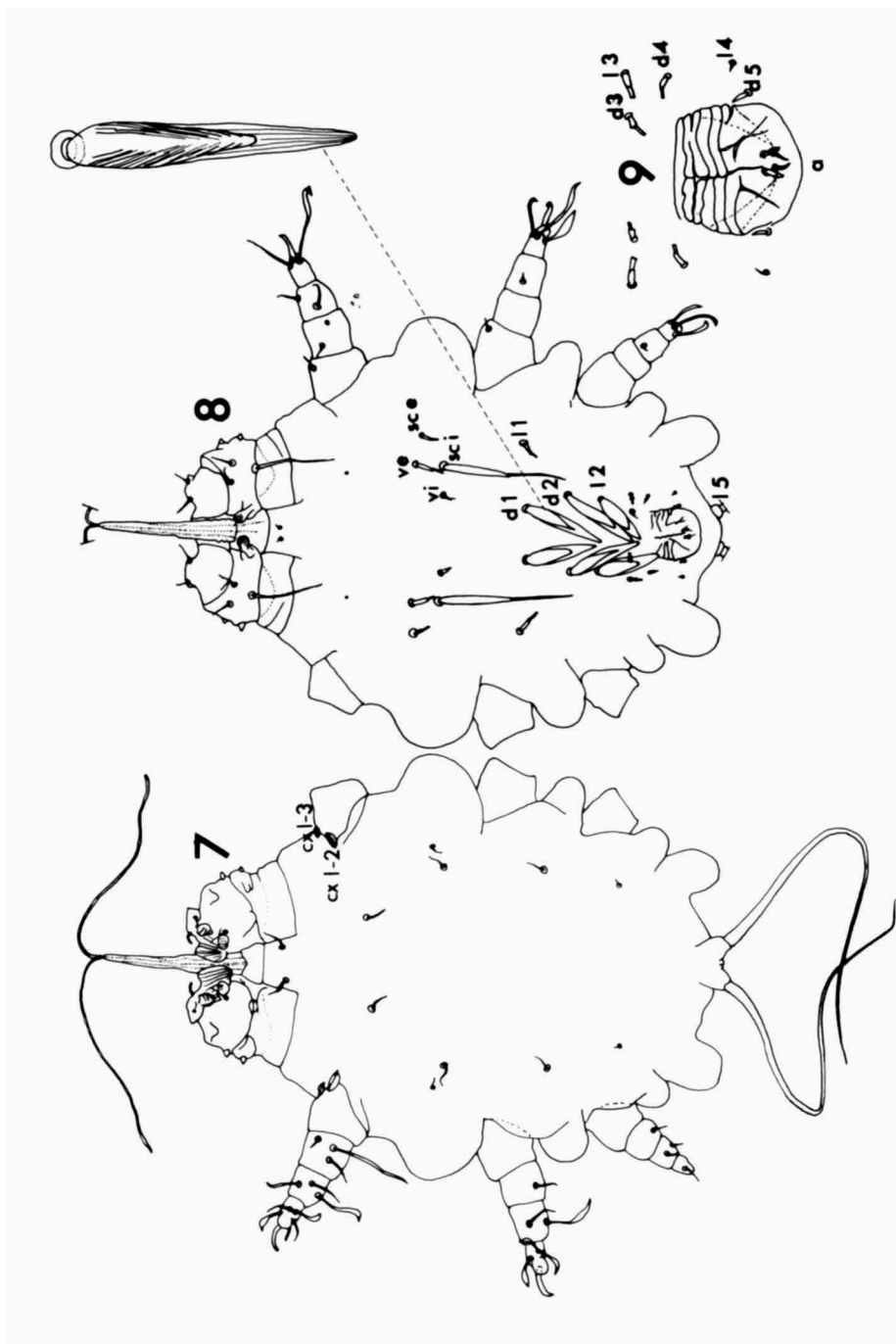
	<i>R.(R.)holochilus</i> ♀♀		<i>R.(R.)ensifera</i> ♀♀		<i>R.(R.)holochilus</i> ♂♂	
	average	min-max	average	min-max	average	min-max
length	464	420-494	460	420-494	457	351-362
width	303	296-314	264	248-281	238	220-247
length v e	97	91-109	77	73- 84	91	82-103
v i	18	15- 21	60	51- 66	10	8- 12
sc e	105	91-116	79	70- 88	110	100-124
sc i	96	88-104	110	99-113	11	8- 13
ℓ 1	97	84-106	56	51- 62	114	97-132
ℓ 2	109	102-117	83	77- 88	75	56- 88
width ℓ 2	19	17- 22	13	12- 15	12	7- 13
length ℓ 3	56	47- 66	10	9- 13		
ℓ 4	10	9- 13	14	12- 16		
ℓ 5	348	334-362	394	362-406	332	316-362
d 1	119	106-131	69	66- 73		
width d 1	15	13- 19	11	10- 13		
length d 2	116	106-128	86	80- 91	78	68- 94
width d 2	17	15- 19	13	12- 16	11	9- 14
length d 3	45	40- 51	16	15- 19	6	4- 8
d 4	10	9- 12	13	12- 15		
d 5	6	6- 7	11	9- 13		
g 2	11	9- 13	12	10- 13		
g 3	10	10- 12	21	19- 23		
g 4	6	5- 6	15	13- 17		
g 7	26	23- 29	16	15- 17		
length penis					200	194-206

Deutonymph (figs. 10, 11) similar to tritonymph, but legs IV reduced to three-segmented stump. Figured specimen 300 μm long and 232 μm broad. Measurements of paratypes and setae in table II. On the dorsum it lacks *ℓ 4*, and on the venter the second pair of coxals I, and coxals II. Chaetotaxy of legs II-IV: claws 1-0-0, tarsi 7-6-2, tibiae 4-3-1, femoro-genua 3-1-0, trochanters 0-0-0.

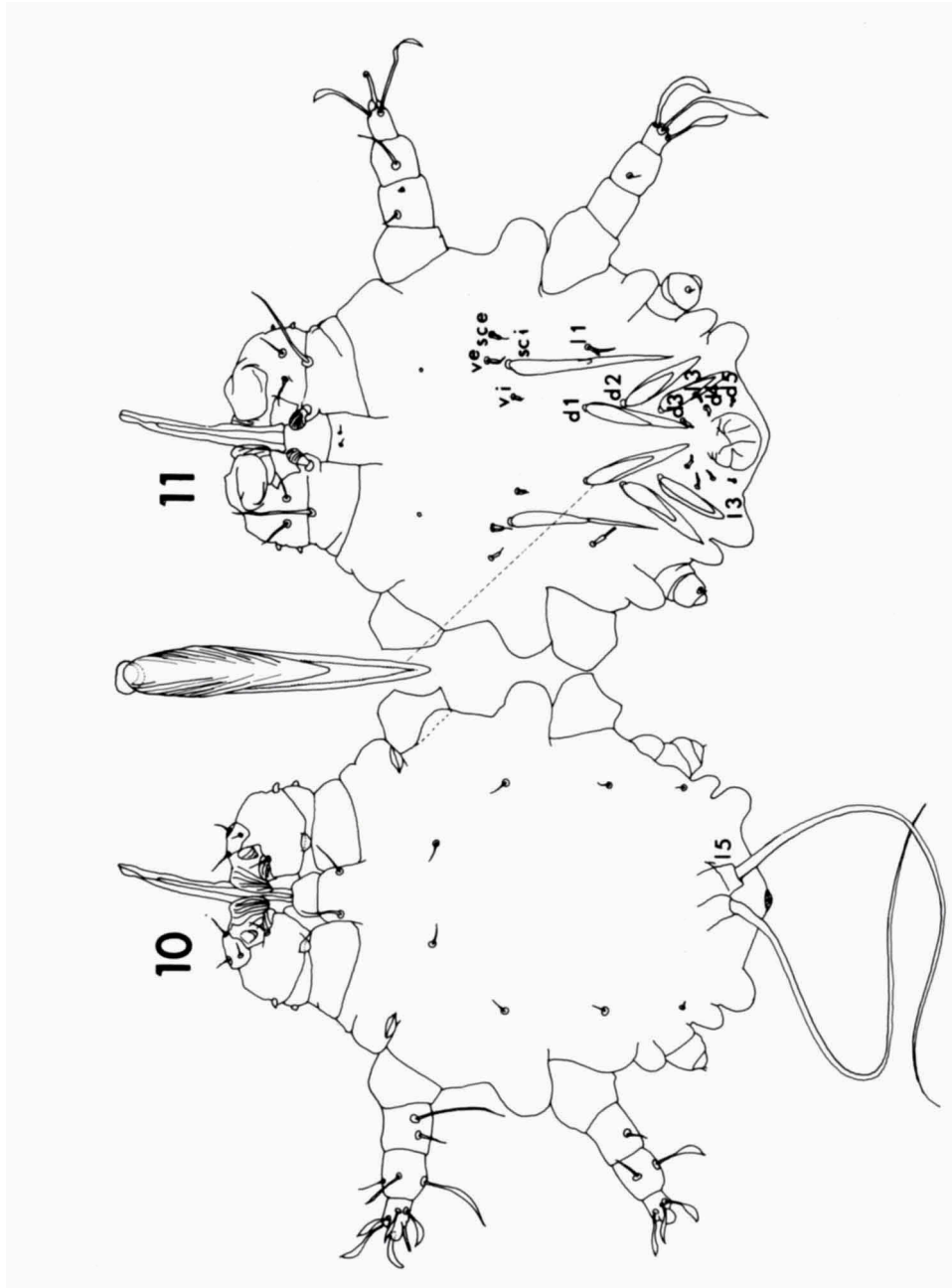
Protonymph (figs. 12, 13) similar to tritonymph, but legs IV absent. Length of figured specimen 268 μm , width 200 μm . Measurements of paratypes and setae in table II. Dorsum as in tritonymph, but *ℓ 3* and *ℓ 4* are lacking; on venter intercoxals 4, coxal 2 in coxal field I and coxal 1 in field II absent. Legs II and III with only one claw on legs II, tarsi 7-6, tibiae 4-3, femoro-genua 2-0, trochanters 0-0.



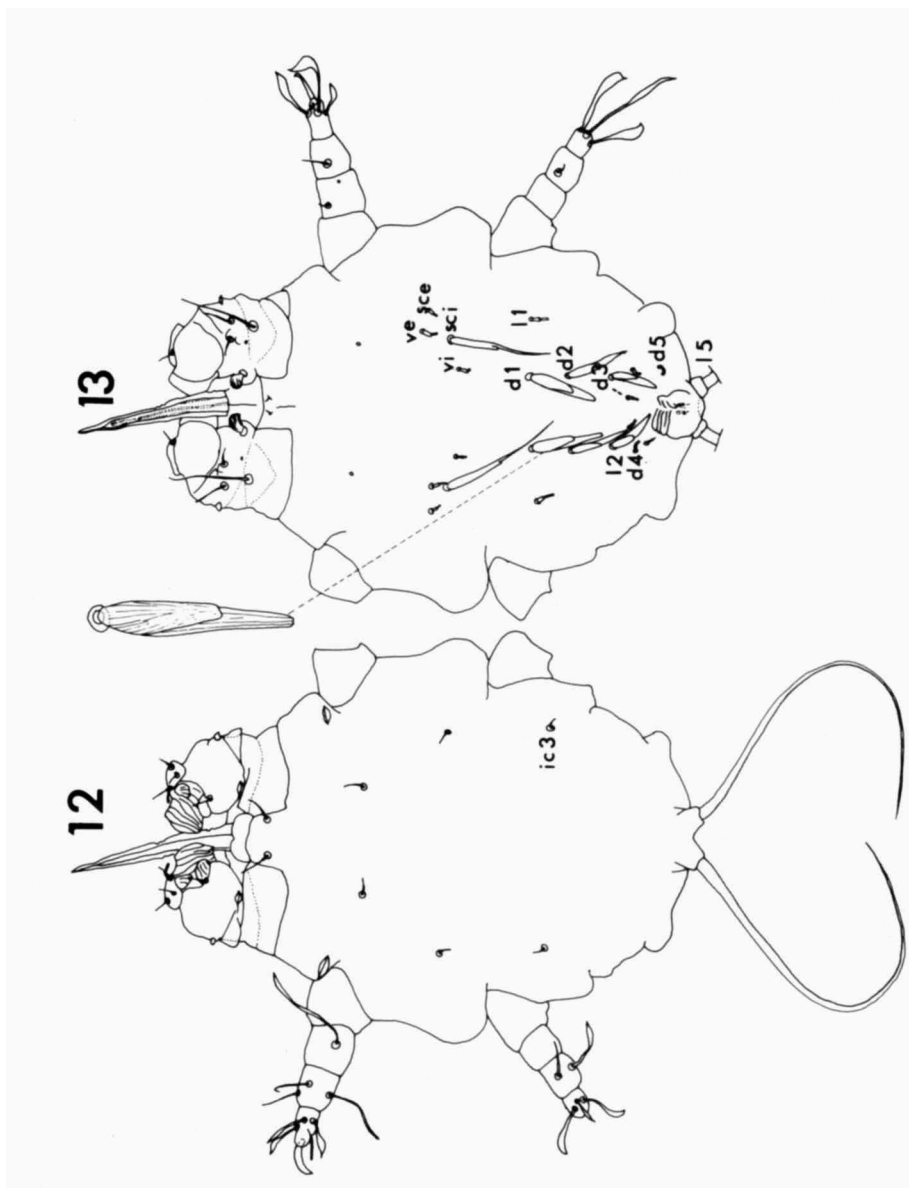
Figs. 4-6. *Radfordia (Radfordia) holochilus* spec. nov., male. Allotype venter (4), allotype dorsum (5), detail penis (6).



Figs. 7-9. *Radfordia (Radfordia) holochilus* spec. nov., tritonymph. Venter (7), dorsum (8), detail uropore region (9).



Figs. 10, 11. *Radfordia (Radfordia) holochilus* spec. nov., deutonymph. Venter (10) and dorsum (11).



Figs. 12, 13. *Radfordia (Radfordia) holochilus* spec. nov., protonymph. Venter (12) and dorsum (13).

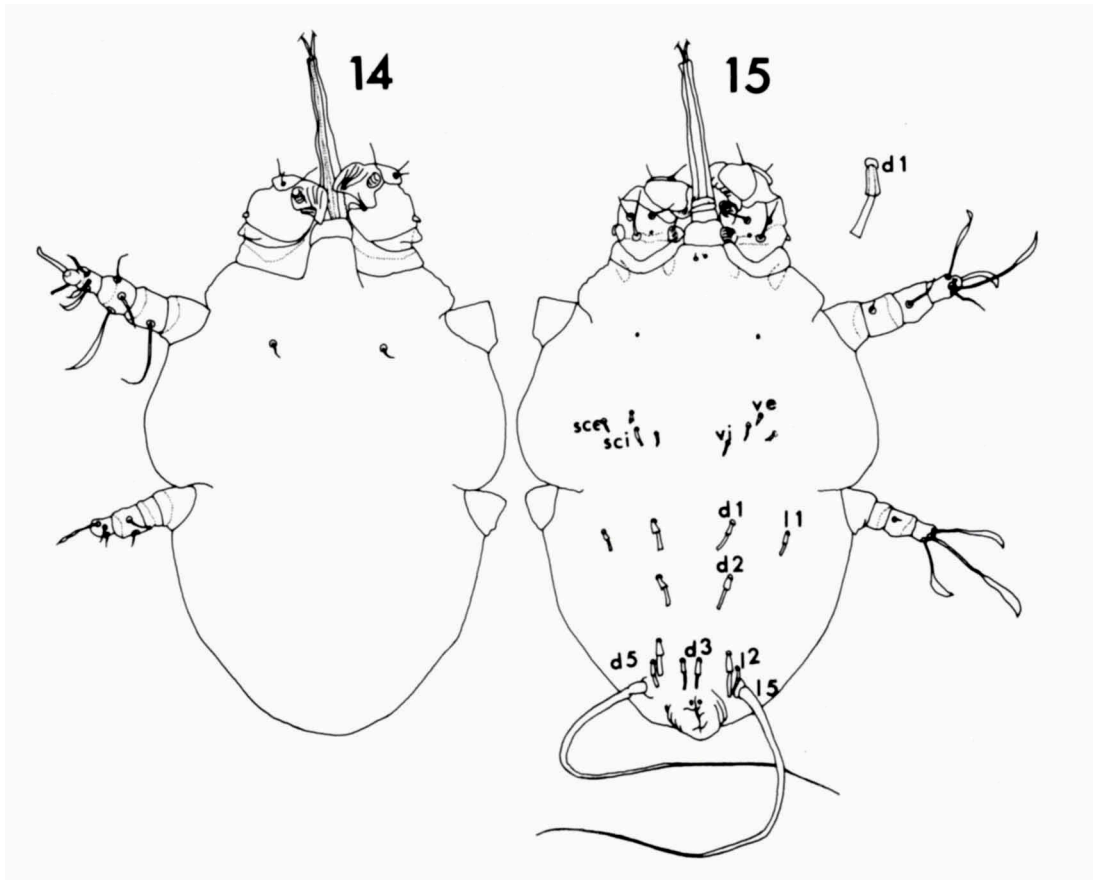
TABLE II: Measurements in μm of the setae and body of the developmental stages of *Radfordia* (*Radfordia*) *holochilus* spec. nov.

	Tritonymph (9 paratypes) average min-max		Deutonymph (10 paratypes) average min-max		Protonymph (8 paratypes) average min-max		Larva (7 paratypes) average min-max	
idiosoma length	406	350-526	353	282-429	297	247-429	271	236-291
idiosoma width	314	276-370	264	220-318	222	182-244	173	144-191
length <i>ve</i>	18	15- 21	11	9- 13	8	6- 9	5	4- 7
<i>vi</i>	7	6- 8	6	5- 7	6	5- 8	6	5- 7
<i>sc e</i>	12	8- 18	8	6- 12	7	5- 9	5	4- 7
<i>sc i</i>	92	79-103	79	62- 91	59	47- 74	8	6- 14
<i>l 1</i>	18	22- 33	15	9- 20	12	8- 18	11	9- 13
<i>l 2</i>	51	38- 60	43	32- 53	25	20- 33	16	13- 20
width <i>l 2</i>	11	8- 14	8	5- 12	4	3- 6		
length <i>l 3</i>	9	7- 12	7	6- 8				
<i>l 4</i>	3	2- 4						
<i>l 5</i>	256	224-282	244	220-288	202	179-235	180	135-200
<i>d 1</i>	64	50- 73	55	41- 68	39	32- 44	14	10- 16
width <i>d 1</i>	11	8- 14	8	6- 11	5	4- 7		
length <i>d 2</i>	60	53- 73	52	38- 65	34	27- 43	14	12- 17
width <i>d 2</i>	11	8- 14	9	6- 11	5	4- 7		
length <i>d 3</i>	8	5- 11	6	6- 8	6	5- 7	14	13- 15
<i>d 4</i>	7	6- 9	6	5- 7	6	5- 7		
<i>d 5</i>	4	2- 5	4	3- 5	7	5- 8	13	12- 16

Larva (figs. 14, 15), length of figured specimen 272 μm , width 173 μm . Present dorsally are *ve*, *vi*, *sc e*, *sc i*, *d 1*, *d 2*, *d 3*, *d 5*, *l 1*, *l 2*, all short, bilobed with blunt tip; one pair of setiform anals; and *l 5* about half of body length. Ventrally only *ic 1* present. Legs with chaetotaxy and claws as in protonymph.

Host and locality. — *Holochilus brasiliensis* (Desmarest, 1819), Wageningen (Surinam), September 25, 1971, F. S. Lukoschus & N. J. J. Kok leg., two host specimens. Hosts in collection of Rijksmuseum van Natuurlijke Historie, Leiden, coll. no. 23110.

Deposition of types. — Holotype ♀, allotype ♂ and figured specimens in Rijksmuseum van Natuurlijke Historie, Leiden; paratypes in U.S. National Museum of Natural History (Smithsonian Institution), Washington, D.C.; Field Museum of Natural History, Chicago; Department of Life Sciences, Indiana State University, Terre Haute, Indiana; Institut de Medicine Tropicale "Prince Leopold", Antwerp; Zoologisches Institut und Zoologisches Museum, Hamburg; British Museum (Natural History), London; and in the collection of the authors.



Figs. 14, 15. *Radfordia (Radfordia) holochilus* spec. nov., larva. Venter (14) and dorsum (15).

DISCUSSION

In the subgenus *Radfordia*, genus *Radfordia*, 26 species have been described up till now. They are parasites of rodents of the subfamilies Murinae (Muridae) and Hesperomyinae (Cricetidae). The length of the intercoxal setae and shape of *d 1*, *d 2* and *l 2* are of systematic importance. The combination of short *ic 1*, *ic 4*, and long *ic 2*, *ic 3* is present in females of all species parasitic on Hesperomyinae except *R. (R.) neotomae* Jameson & Whitaker, 1975, but this combination is absent in all species from Murinae. Although more information on American hosts is needed, this might become a characteristic for separation of the groups from parasitized rodent families.

There is a trend for broadening of setae *d 1*, *d 2* and *l 2* in females within this subgenus. Laterals 2 broader than 10 μm are present in *R. (R.) ensifera* (Poppe, 1909), *R. (R.) lancearia* (Poppe, 1909), *R. (R.) malacomys* Fain, 1972, *R. (R.)*

hornerae Domrow, 1963, *R. (R.) expansa* Jameson & Whitaker, 1975, *R. (R.) oryzomys* Fain & Lukoschus, 1976, *R. (R.) pogonomys* Fain & Lukoschus, 1976, *R. (R.) australiana* Fain & Lukoschus, 1979, and the new species. The combination of broad laterals 2 with long intercoxals 2 and 3 is present only in *R. (R.) oryzomys* and *R. (R.) holochilus*, both from Hesperomyinae.

Measurements of *R. (R.) ensifera* are given for comparison in table I.

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